

IN MEMORIAM.

THOMAS WHARTON JONES, F.R.S.

BY the death of Mr. Wharton Jones, on the 7th inst., in the eighty-fourth year of his age, we have lost the living presence of one of England's greatest physiologists. His fame will abide, and even increase, when the circumstances and influences amid which his reputation was at once made and thwarted become more remote, and lapse into the impartial domain of medical history. Indeed, his scientific work is historical already; for there are few persons now living who witnessed his earlier and more famous biological researches and discoveries.

Thomas Wharton Jones was born at St. Andrews in January, 1808, his father, a native of London, being at the time one of the secretaries of His Majesty's Customs for Scotland. On his father's side he was descended from a wealthy Shropshire family, and on his mother's side from an old English family, named Alliston or Elliston, of Essex and Kent, and from the family of Philipps of Chesham. The Ellistons sprang from one Alestan, a freeman, whose lands in several parishes in the county of Essex were, according to Domesday Book, confiscated at the Conquest. By a combination of unfortunate circumstances, very little, if any, of either the paternal or the maternal

wealth came to Wharton Jones, and what patrimony he did inherit seems soon to have disappeared. His early education was obtained at schools in Stirling, Dalmeny, and at Musselburgh, where his father died in the year 1821. Shortly after this event Jones began attendance on the literary classes in the University of Edinburgh, and two or three years later on the medical classes in the University. He soon distinguished himself in anatomy, and from the year 1827 to the year 1829, or later, was assistant to Robert Knox, the eminent teacher of anatomy in Edinburgh. He then migrated to Glasgow, where he became associated with Dr. Mackenzie, the well-know ophthalmic surgeon, and with Professor Rainy. About the year 1835 he went to Cork, and for a time he engaged in medical practice there, devoting himself chiefly to diseases of the eye and ear. In 1837 he visited the principal universities on the Continent, and settled in London in the following year. Here he at once began the practice of his profession as an oculist, continuing at the same time his studies and researches in anatomy, physiology, and pathology. He became lecturer on these subjects at the Charing-cross Hospital, and afterwards Fullerian Professor of Physiology in the Royal Institution of Great Britain. In the year 1840 he was elected a Fellow of the Royal Society, and in the following year he obtained the diploma of Member of the Royal College of Surgeons of England, of which he was elected a Fellow three years later. In 1851 he was appointed Professor of Ophthalmic Medicine and Surgery in University College, London, and he occupied this chair for thirty years. In the severe winter of 1880-81 his health, never robust, suddenly and seriously failed ; he resigned his professorship in the College, but in consideration of his long and distinguished services

was appointed Emeritus Professor. He then retired to Ventnor, where he lived up to the time of his death, continuing, however, his favourite studies, especially those relating to the physiology and pathology of the circulation of the blood and of the state of the bloodvessels in inflammation. He also thought and wrote much on political and ecclesiastical history, and on gynæcology. He wrote also a history of the Irish Rebellion of 1641. This history has not been published, though a portion of it appeared about three years ago, entitled "Rule in Ireland from St. Patrick to Cromwell." His studies of Irish history led him to regard with great disfavour any proposal for Home Rule. He was a foreign member of the medical societies of Vienna and Copenhagen, and of the Société de Biologie of Paris.

Wharton Jones lived a long, full, and useful life. Sixty-one years ago he published a synopsis of a course of lectures on physiology and anatomy, and within the last few months he issued an interesting report on the State of the Blood and Bloodvessels in Inflammation, in which he acutely criticised a part of the modern doctrine of Inflammation and its advocates. The long interval between these two publications was one of unceasing intellectual activity, of scientific and historical research, of polemics, and of public professional labour. His published writings are widely scattered, but the following are the more important of those relating to anatomy and physiology. In 1835 he read a paper to the Royal Society, containing an account of his discovery of the germinal vesicle in the mammiferous ovum. About a year before this Coste had observed the germinal vesicle in the rabbit; but Jones's observations were certainly made without knowledge of Coste's. In 1837 he published in the "Philosophical Transactions" a paper on

the First Changes in Mammiferous Ova in consequence of Impregnation, and on the Mode of Origin of the Chorion. Respecting this paper, it is interesting to find among the letters which Jones from time to time addressed to Dr. Mackenzie of Glasgow, and which are now in the possession of Dr. Thomas Reid of that city, a letter written in Berlin, and dated October, 1837, in which Jones tells of a meeting of naturalists and physicians at Prague, where he met Coste, and, addressing the meeting in French, combated Coste's views regarding the mode of origin of the chorion, and he adds, "Purkinje thought my views most in accordance with analogy." In 1838 Jones wrote the article on the Organ of Hearing for the "Cyclopædia of Anatomy and Physiology"; and in 1841 articles on the Ear and Hearing and on Ectropion for Costello's "Cyclopædia of Practical Surgery." In the year 1846 an account of his observations on the Blood-corpuscle appeared in the "Philosophical Transactions." In this paper he announced his discovery of the spontaneous changes of shape and other movements—the so-called amoeboid movements—of the colourless corpuscles in the blood of the skate, frog, and other animals, including man. These corpuscles he named "granule-cells," after Professor Vogel of Göttingen. In this paper also he protested that the multinuclear appearance of the cell after the application of acetic acid was artificial, and due to shrivelling of the walls of the single nucleus by the action of the acid. Simple as this observation may now seem, it is only within the last few years that its correctness has been generally recognised. About the year 1842 he contributed to the *British and Foreign Medical Review* certain reports on Inflammation, and in the year 1850 he obtained the Sir Astley Cooper prize for his classical essay on the

State of the Blood and Bloodvessels in Inflammation as ascertained by experiments, injections, and observations under the microscope. This was supplemented two years later by a paper describing the phenomena of inflammation in the web of the bat's wing, his previous observations having been on the web of the frog's foot.

In the Astley Cooper prize essay, which greatly increased our knowledge of the circulation through the capillaries, and elucidated the phenomena of the inflammatory process, he incidentally announced another important discovery—namely, the peculiar degeneration which takes place in the distal end of a divided nerve. As this change is usually associated with the name of Waller, it is but justice to state that Wharton Jones first observed it, and that he subsequently commended it to Waller as a matter worthy of further and fuller investigation. He referred to the change in these words: "It may here be observed that some days after section of the ischiatic nerve [of the frog], I have found that the primitive fibrils of the nerve of the web no longer present their natural homogeneous appearance, but, as in dead nerves, their medullary contents appear broken up and granular." (Guy's Hospital Reports, vol. ii., part 1, p. 12, 1850.) In the year 1852 he announced the interesting discovery that the veins of the bat's wing, which are furnished with valves, are endowed with rhythmical contractility, and that the onward flow of the blood is accelerated by the contraction. In 1868 he published in the "Philosophical Transactions" a paper entitled "The Caudal Heart of the Eel, a Lymphatic Heart," and in the same year a paper entitled "The Phenomena observed to attend the Propulsion of Lymph from the Anterior Lymphatic Heart into the Vein in the Frog." He also wrote many other articles and reports on the Blood in Health and in

Inflammation; on the Healing Process; on the Contents of the Hepatic Ducts; on the Anatomy of the Choroid Gland of the Fish's Eye (1838); and on the Muscle as a Neuromagnetic Apparatus (1843). It may also be mentioned that in the year 1833 he published a "Manual of Pharmacology," which exhibits the precision, comprehensiveness, and logical method which characterised his later work.

Illustrative of the catholicity of his intellectual tastes and pursuits, it may be mentioned that, in addition to his various contributions to medical and other scientific literature, he obtained in 1851 the Actonian prize for an essay on the Wisdom and Beneficence of the Almighty displayed in the Sense of Vision, and in 1858 he published a Catechism of the Physiology and Philosophy of Body, Sense, and Mind, and that in the year 1872 he edited for the Camden Society the life and death of his distinguished ancestral kinsman, Bishop Bedell of Kilmore, who perished in the Irish Rebellion of 1641, and of whom Fra Paolo Sarpi, the famous historian of the Council of Trent, declared he had "learned more from him than any other divine." In 1876 Mr. Jones published an interesting volume maintaining that the Darwinian doctrine of Evolution is unsanctioned by science.

A painful episode of Wharton Jones's early life, about which he never cared to speak, may here be mentioned. In 1827, when but nineteen or twenty years of age, he was, together with the late Sir William Fergusson and Alexander Miller, one of the chief assistants of Robert Knox, the famous extra-mural lecturer on anatomy in Edinburgh. About Christmas, 1827, there died, in the house of a man named Hare, an old pensioner named Donald, owing his landlord about £4. The funeral

arrangements were complete, when it occurred to Hare that by selling the body to the anatomists he might recoup himself. This suggestion he confided to one Burke, promising him a share in the proceeds, and in the evening the two men visited Knox's class rooms and negotiated the sale of the body for the sum of £7 10s. This money was paid by Jones, who, unsuspecting the crimes which were to follow, jocosely remarked, "He would be glad to see them again when they had any other body to dispose of." The ease and success of this first transaction with the anatomists soon led Hare and his too-willing tool, Burke, to the perpetration of a series of cruel and heartless murders, the discovery of which, at the beginning of November, 1828, so startled and shocked the whole community. The bodies of the murdered victims were sold by Burke and Hare to Knox for the purposes of anatomy. The public indignation on the discovery of the murders was so great that many persons did not hesitate to charge Knox and his assistants with being privy to the murders. Burke, however, declared in the condemned cell on Jan. 21st, 1829, that "Doctor Knox never incoureged him, nither taught or incoureged him to murder any person, nether any of his asistents, that worthy gentleman, Mr. Fergeson was the only man that ever mentioned anything about the bodies. He inquired where we got the yong woman Paterson." A committee of investigation, with the Marquis of Queensberry at its head, was formed at the request of Knox to inquire into the truth or falsehood of the rumours in circulation against Knox and his assistants, and it reported, what every rational person anticipated, that it had seen no evidence "that Dr. Knox or his assistants knew that murder was committed in procuring any subjects brought to his rooms, and the committee firmly believe that they did not."

Looking back upon Jones's history as a physiologist, it is interesting to observe that, though he was a pioneer and one of the founders of modern physiology, he not only did not follow some of its later developments, but was in many respects out of sympathy with these developments. It is remarkable that while his discovery of the amoeboid movements of the colourless blood-corpuscles prepared the way for the modern doctrine of leucocytes, he himself never accepted the fundamental basis of this doctrine. It should be remembered, however, that his physiological investigations were made at a time when the facilities and opportunities for such researches were few and difficult, and the time and labour required correspondingly great. He did not realise that many modern discoveries had become possible, and even comparatively easy, in consequence of improved physical, chemical, and optical apparatus, and that what in his time required weeks and months to make out may, by the modern student, with present facilities, be accomplished in a few moments. He did not believe in "science made easy," and his distrust of some recent physiology probably arose from the fact that much of the teaching of physiology has since his time been made easy. He was a genuine philosopher; he had what Plato calls *δρεξιν τῆς θείας σοφίας*. He was filled with a passion for knowledge, wisdom, and truth, and spared no labour to acquire them. He worked zealously, continuously, laboriously. He could not understand the modern system of "cram." Hence, as a teacher, whilst he repelled the careless or the casual student, he attracted and encouraged the serious and intelligent one by his earnestness, his contempt for shams and all pretence in knowledge. Indeed, the only student he would recognise was a rational being eagerly striving after truth, not a vitalised phonograph into which

sounds and sentences were to be uttered only to be droned out again in the same order and sequence in an examination room. His method was that of observation, experimentation, and verification. When questioned by pupils, he did not return a mere didactic answer. His maxim was : "Let us look ; let us see."

Though Wharton Jones's claim to a place in medical history mainly rests on his physiological investigations and discoveries, it will also be remembered that he was a distinguished ophthalmologist. He began his studies in ophthalmic medicine and surgery about sixty years ago under the auspices of Mackenzie, to whom from time to time he was most helpful in the preparation of the several editions of this author's famous work on Diseases of the Eye. The chapter on the Anatomy of the Eye and many of the pathological sections were written by Wharton Jones. In the year 1847 he published his own treatise on Ophthalmic Medicine and Surgery, the third edition of which appeared in 1865, and in 1869 appeared his able and acute but somewhat transcendental work, entitled "The Failure of Sight from Railway and other Injuries to the Spine and Head."

As in science he was a philosopher, so as a practitioner of medicine he resembled the Greek *Ιατρος* or the Latin *Medicus*, being, according to modern notions, a physician rather than a surgeon. He was learned, observant, sagacious, full of knowledge and experience. As an operator he was not showy, perhaps not dexterous in the narrow sense of the term, but he was successful as judged by results. Amongst some of the additions which he made to our knowledge was the suggestion that astigmatism is due to a fault of curvature of the cornea, and not to a fault in the lens, as the celebrated

Thomas Young, who first described this anomaly, believed. He was also one of the first (if not the first) to observe the frequent association of retinitis pigmentosa with deaf-mutism and other neurotic disorders; and he devised an ingenious procedure for remedying cicatricial ectropion. In the course of his investigations and experiments with Calabar bean he noted the beneficial action of the local application of this drug in some cases of acute glaucoma, before the special therapeutic properties of this drug in glaucoma had been observed, so far as the writer of this notice is aware, by any other person. His explanation of the *modus operandi* of Calabar bean in this disease was faulty, but the observation was well founded and correct.

Mr. Jones was of a retiring disposition, and for many years lived almost the life of a recluse. He made few personal friendships, and indeed had not the gift of attracting friends. But within an apparently rugged exterior and behind a manner seemingly harsh and unsympathetic a few who really knew him discovered a kind and gentle spirit. He was pleased and even proud to number among his friends the late Sir James Clark, the late Sir John Forbes (editor of the *British and Foreign Medical Review*), the late Professor Thomas Graham, Master of the Mint, the late Robert Grant, the comparative anatomist, and especially the late Dr. Mackenzie of Glasgow; and also his former pupils Professor Huxley and Sir Joseph Fayrer, his quondam colleague Sir William Jenner, and Mr. Commissioner Kerr. He was naturally modest, but he was also self-respecting; he was great, and knew that he was great. He knew the worth of his work, and he resented the studied depreciation of his labours by some of the nominal leaders of physiological opinion in this country. The feuds and contro-

versies in which he thereby became involved did no doubt tend to embitter his life, check his worldly advancement, and prevent a due appreciation of his great abilities. These abilities were, however, of a very high order. Sir William Jenner, in the presence of a large class, once spoke of Wharton Jones as one of the greatest Englishmen who have ever lived. This may seem exaggerated praise to those who only knew Wharton Jones as a name; but Professor Huxley, an equally competent authority, has expressed with feelings of gratitude his intellectual indebtedness to the method and quality of Mr. Jones's physiological teaching.

Sir Joseph Fayrer writes: "I was a pupil of Mr. Wharton Jones during the three winter sessions of 1844-47, and have the most vivid and grateful recollection of the scope and value of his teaching. Indeed, I may say that any knowledge of biology I possess is based on the instruction that I received from him. He was a man of retiring habits, and of slight, almost feeble, physique, but most earnest, enthusiastic, and impressive in his manner of imparting knowledge of the subjects he knew so well, and in which, I imagine, he was hardly excelled by anyone living at that time. His personal influence on his pupils was great, and he was as much respected as he was loved by them all."

J. T.

To the Editors of THE LANCET.

SIRS.—The sense of the paragraph in your obituary notice of the late Mr. Wharton Jones, commencing "As this change is usually associated with the name of Waller, it is but justice to state that Wharton Jones first observed it" (p. 1256), is not historically accurate. The quotation given

by you from the Guy's Hospital Reports bears the date Oct. 1850. Waller's first paper on the subject in the Phil. Trans. bears the date Oct. 1849, received Nov. 22nd, 1849, read Feb. 21st, 1850. Moreover, the bare observation of the fact that nerves degenerate after section had been previously made by Nasse (Müller's Archiv, 1839) and by Gunther and Schön (Müller's Archiv, 1840). This was duly recognised by Waller in 1849 as well as in his 1851 paper (Comptes Rendus, Ac. des Sc.), which contains the full account of the method, of investigation originated from these first observations, and of the "Law of the Centres"—i.e., of the trophic action of nerve-cells.

I am, Sirs, yours truly,

A. D. WALLER.

DEAR SIRS,—By courtesy of Dr. A. D. Waller I have read the above, and have to say that in the notice of Mr. Wharton Jones' life and work I merely repeated what I remembered of conversations with Mr. Jones many years ago and have otherwise no special knowledge or authority on the matter referred to.

I am, Sirs, yours truly,

Harley-street, W., Dec. 2nd, 1891.

J. T.

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